

REMARKS

Status of Claims

Claims 1 and 6-10 are pending, of which claims 1 and 6 are independent.

Claim Rejection - 35 U.S.C. § 103

Claims 1, 6 and 9-10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hirai (USP 6,136,228) in view of T. Moritz and A. Nagy ("Preparation of super soft granulate from nanosized ceramic powders by spray freezing," *Journal of Nanoparticle Research*, Vol. 4 (2002), pp. 439-448) and Sommer ("Size Enlargement," Ullmann's Encyclopedia of Industrial Chemistry (June 15, 2000), pp. 1-15 and 37-40). Claims 7-8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hirai in view of Moritz and Sommer, and in further view of Bouaricha (US Pub. 2004/0208775). Applicants respectfully traverse these rejections for at least the following reasons.

Applicants respectfully note that as the particle diameter of metal particles decreases to a nanometer size, the van der Waals force between the metal particles increases, aggravating the problem of the intensification of the particle agglomeration (see, page 2, lines 4-6 of the present specification). Therefore, when a dispersion including metal particles with a nanometer size is simply dried, the metal particles are prone to agglutinate. In contrast, in the present disclosure, by controlling the water content and apparent density of the dispersion within a certain range, the particle agglomeration problem can be prevented. As a result, the granular metal powder according to the present subject matter can be re-dispersed in a dispersion solvent.

Applicants respectfully submit that, at a minimum, Hirai fails to disclose the claimed granular metal ***powder***. Although the Examiner asserts that Hirai discloses a similar

manufacturing process to that of the present disclosure, Hirai merely discloses dispersions of fine metal particles, not a ***granular metal power***. In other words, the dispersions (or coating liquid) of Hirai do not correspond to a granular metal powder of claims 1 and 6.

In the Office Action, the Examiner asserts that Hirai discloses the step of “a2) removing most of the solvent from the solution by heating at 90°C for 5 hours.” However, Hirai does not disclose that “most” of the solvent is removed. Hirai merely states “[t]he mixture was heated at 90°C for 5 hr” (see, col. 18, line 24 of Hirai). Further, what was obtained after this heating is “dispersions” of fine metal particles (see, col. 18, lines 26-27 of Hirai). As such, according to Hirai’s method, while dispersions of metal powder are obtained, no granular metal ***powder*** is obtained. Furthermore, Hirai discloses that after this heating at 90°C for 5 hr, methanol in the dispersion was removed by heating (see, col. 8, lines 28-29 of Hirai), which also means that the solvent removed is not “most.”

Applicants also submit that even if the methanol is removed by heating, since the dispersion contains a mixed solvent of methanol and water (see, col. 18, lines 14-15 of Hirai), the water still remains in the dispersion as the solvent, which means that the heated dispersion (to remove methanol) is not powdery. As such, what is obtained by the Hirai’s method is, at any steps, not a granular metal ***powder***, but a dispersion of metal particles.

It is also noted that Hirai does not disclose or even suggest that the granular metal powder is formed by drying a medium to be stored and then it is redispersed when used, as disclosed by the present application. Further, if the dispersion of Hirai were simply dried, the resultant material would also be easily agglutinated.

As such, it is clear that, at a minimum, Hirai fails to disclose the claimed granular metal ***powder***. Applicants submit that none of the remaining cited references cures this deficiency of

Hirai. Applicants also submit that it would not have been obvious to add this feature to any combination of the cited references.

Further, Applicants disagree with the Examiner's assertion that the claimed water content is obvious from Moritz. The Examiner asserts that Moritz discloses that higher moisture content lead to stronger granules. However, Moritz fails to disclose or even recognize that higher moisture would cause agglomeration as disclosed at page 14, lines 5-9 of the present specification. As such, it would not have been obvious to limit the water content in the granular metal powder to at least 0.1 wt% and at most 1.5 wt%, as recited by claims 1 and 6.

Based on the foregoing, Applicants respectfully submit that claims 1 and 6 and all claims dependent thereon are patentable over the cited references. Thus, it is requested that the Examiner withdraw the rejections of claims 1 and 6-10 under 35 U.S.C. § 103(a).

CONCLUSION

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication for which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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